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NEWS LETTER

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ADMINISTRATIVE

It has been the aim of the Bureau in the past to place a copy of the monthly News Letter in the hands of each employee. A drastic reduction in the amount that may be expended for the purchase of blank paper during the current fiscal year makes it necessary to very greatly curtail the edition of this periodical. To meet the situation, a revised plan of distribution, calling for the placing of one copy in each field office, has been determined upon. This will explain the reason for the failure to receive more than one copy of the News Letter at stations where two or more inspectors are employed. Naturally, the inspector in charge will be expected to give all of his assistants an opportunity to read the News Letter.

TECHNOLOGICAL

In cooperation with the Japanese Beetle Project of this Bureau, a machine for the separation of adult Japanese beetles from green string beans has been completed and tested. The machine is an adaptation of the rotary gravel screen and consists of two cylinders of half-inch mesh wire 7 feet long, one inside the other, the inner cylinder being 20 inches in diameter and the outer 28 inches. The cylinders are connected rigidly so that there is a 4-inch space between them, and mounted on rollers on an angle iron frame, one end being slightly higher than the other. Power to rotate the cylinder is applied on one set of the rubber-tired rollers by means of a sprocket connected by a link belt to a driving sprocket to which a crank is attached. The beans direct from the field are fed into the upper end of the cylinder, and the cylinder revolved so that the beans are spread out loosely on the surface of the inner cylinder, the beetles falling through the mesh and the beans coming out the lower end of the cylinder where they are caught in hampers. This machine will handle about 1 bushel of beans per minute. The cost of operation should be less than a cent a bushel.

The method of fumigation of bananas, authorized in PQCA-317, was investigated cooperatively by the United Fruit Company and the Japanese Beetle Project of the Bureau of Entomology this spring. The research department of the United Fruit Company determined the concentration of hydrocyanic acid gas which could be applied to bananas without injury, and the Japanese Beetle Laboratory of the Bureau of Entomology determined the concentration which was necessary to produce complete mortality in the adult stage of the Japanese beetle. As a result of this work, it is possible to authorize a dosage of liquid hydrocyanic acid for the fumigation of this fruit of 6 ounces per carload, which will reduce the cost to about \$0.35 per car for material as against the cost of \$2.25 to \$9.75 per car in former years, depending on the cost of the calcium cyanide.

In the June number of the American Journal of Public Health and The Nation's Health, E. M. Nelson and H. H. Mottern, of the Bureau of Chemistry and Soils, have a paper entitled "Effect of Lead Arsenate Spray on the Composition and Vitamin Content of Oranges." In this paper the effect of sterilization by heat as practiced in Florida on citrus during the Mediterranean fruit fly campaign is discussed. They found that there is practically no difference in the chemical composition of processed and unprocessed fruit and state in the last paragraph:

"The processing of oranges as practiced by Plant Quarantine and Control Administration to destroy larvae of the Mediterranean fruit fly did not change the character of the sugars, citric acid or vitamin C content of the fruit."

FOREIGN PLANT QUARANTINES

RECENT ENTOMOLOGICAL INTERCEPTIONS OF INTEREST

Asiatic rice borer from Japan.--Living larvae and pupae of Chilo simplex Butler (Asiatic rice borer) were intercepted at New York and Philadelphia in rice straw used as packing for merchandise in cargo from Japan. This pyralid has also been intercepted from Japan at Honolulu, San Francisco and San Pedro, Calif., Seattle, Wash., and Washington, D. C.

Pyralid in tamarind pods.--Larvae of Myelois ceratoniae Zeller (Pyralidae) were collected in tamarind pods in the field at Trujillo, Puerto Rico. This pyralid is not reported from the continental United States.

Aphid from England.--Periphyllus aceris (Linn.) (aphid) was intercepted at Washington, D. C., on Acer miyabei in the express from England. This insect is not recorded from the continental United States.

Japanese beetle and Aserica sp. from Japan.--Larvae of the Japanese

beetle (Popillia japonica Newm.) and of Aserica sp. (Scarabaeidae) were intercepted at San Francisco in soil in furnishings from Japan. This is the first record in our files of the Japanese beetle being intercepted from a foreign country.

Coccid from Cuba.--Trionymus sacchari (Ckll.) (Coccidae) was intercepted at Norfolk, Va., with sugarcane in quarters from Cuba. This coccid was formerly known as Pseudococcus sacchari (Ckll.).

Coccid on mango.--Specimens of Puto spinosus (Rob.) (Coccidae) were intercepted at Honolulu, Hawaii, on the leaf and stem of a mango seedling in quarters from the Philippines.

Pink bollworm from the Bahamas.--Larvae of the pink bollworm (Pectinophora gossypiella Saund.) were intercepted at Washington, D. C., in cottonseed in the mail from Highburn Cay, Bahamas. This is the first record in our files of the pink bollworm being intercepted from the Bahamas.

Fulgorid from Panama.--Dictyophora herbida Walker (Fulgoridae) was intercepted at San Francisco with bananas in cargo from Panama.

Coreid from Guatemala.--An adult of Anasa bellator Fab. (Coreidae) was intercepted at Mobile, Ala., on banana in cargo from Guatemala.

Avocados infested with a miner.--Avocados showing the work of a lepidopterous miner (Marmara sp.) were intercepted at Brownsville, Tex., in baggage from Mexico. C. Heinrich, of the Bureau of Entomology, remarks as follows concerning this gracilariid: "We have records of this genus in outer skin of orange and apple fruits, also in outer bark (new growth) of chestnut, willow, oak, elm, hibiscus, etc. In fruit or bark it is always an epidermis miner."

Cydnid from Curacao.--An adult of Alkindus atratus Dist. (Cydnidae) was intercepted at Philadelphia on a cylindrical cactus in quarters from Curacao, Dutch West Indies. This is our first record of this hemipteron being intercepted.

Tenebrionid from Panama.--Two adults of Anaedes setulosus Champion (Tenebrionidae) were intercepted at San Francisco with bananas in cargo from Panama. This represents the first record in our files of this beetle being intercepted.

Sweetpotato weevil from St. Kitts.--Larvae of Cylas formicarius F. (sweetpotato weevil) were intercepted at Boston in a sweetpotato in the mail from St. Kitts, British West Indies. This represents our first record of the sweetpotato weevil being intercepted from St. Kitts.

Termite from Tobago and British Guiana.--Nasutitermes costalis Holmgren (termite) was intercepted at Washington, D. C., in a pseudobulb of an orchid (Diacrium bicornutum) in cargo from Tobago, British West Indies, and with Tillandsia offshoots in cargo from British Guiana. This termite, which occurs in

the West Indies, Central and South America, is not reported from the continental United States.

RECENT PATHOLOGICAL INTERCEPTIONS OF INTEREST

Nematode interceptions.--Interceptions of nematodes showed a marked seasonal increase and included the following parasitic forms: Aphelenchoides parietinus in carrot from Denmark, Germany, Holland (2), and Sweden, in bulbous iris from Michigan, Washington (4), and Wisconsin, and in narcissus from Washington; Aphelenchus avenae in carrot from Denmark, in garlic from Italy (2), in bulbous iris from Michigan, Washington (2), and Wisconsin, and in potato from Trinidad; Neotylenchus abulbosus in carrot from Sweden; Tylenchus dipsaci in garlic from Italy, in bulbous iris from Washington and Wisconsin, in narcissus from Long Island (13), and in potato from Germany (2); T. intermedius in bulbous iris from Washington; and T. robustus in bulbous iris from Wisconsin.

This list does not include collections made during the domestic narcissus quarantine inspections.

In many cases more than one species of nema was found in an interception, a small lot of iris bulbs from Wisconsin containing Aphelenchoides parietinus, Aphelenchus avenae, Tylenchus dipsaci, T. robustus, and two saprophytic genera, notwithstanding the fact that very few individuals were found.

Cymbidium "mosaic".--Ohio has been added to the States in which the mosaic-like disease of cymbidiums occurs. (See June, 1932, News Letter, p.4.)

Chayote disease.--A chayote (Sechium edule) from Cuba intercepted at New York had a considerable area showing rots. An ascomycete tentatively determined as Mycosphaerella sp. was fruiting on a blackened area and abundant Fusarium sp. spores were present on a pinkish area. After being kept a few days, Nectria sp. was found fruiting on the pinkish area, presumably the perfect stage of the Fusarium. These fungi are not listed in Stevenson's Manual as attacking chayote; in fact, he lists no rots for this host.

STEM BORER IN RICE STRAW PACKING

Rice straw packing from the Orient has been repeatedly found infested with the stem borer (Chilo simplex); many commodities, especially pottery, are packed in this material. (See issue of June 1, 1932.) The extent to which rice straw may be infested with this insect is well illustrated by the following outstanding case reported by H. M. Armitage, of San Francisco, June 13, 1932:

"You will be interested in a condition report of a shipment intercepted Saturday destined to San Francisco. The straw packing was exceptionally heavily infested, as many as five larvae and pupae being found between joints. The one-eighth inch crevices between the boards making up the crate were lined with pupae and several dozen were removed

from under the metal strapping in individual cases. In many instances the larvae had excavated cavities in the wooden slats making up the case material, in which they had spun their light silk cocoons preparatory to pupation. Several adults had emerged within the containers and were captured when the cases were opened. This shipment was given immediate fumigation on the dock. I am reporting it as indicating the extent to which some of this material is infested."

SMUGGLER OF PLANTS FINED

On May 6, 1932, a woman crossing the border from Canada by automobile at Blaine, Wash., submitted the customary signed declaration to Customs, in which she listed some purchases made in Canada but omitted mention of any plants. Upon examination of the car by Customs inspectors, it was found that 113 packages of small plants, including azaleas, rhododendrons, and miscellaneous rock plants, were concealed behind the upholstery of the back seat. It was necessary to loosen several screws in order to remove the plants from their hiding place. The collection, valued by Customs at \$50, was confiscated and the car seized. Before regaining possession of her car this offender was required to pay a \$200 fine, and in addition to this another \$50 representing the estimated value of the plants. The confiscated packages were held for the customary 20 days and then burned by Customs.

VESSEL BRINGS IN FRUIT FLY ON HER FIRST TRIP

The following ship inspection report submitted by A. P. Messenger, of San Pedro, Calif., June 22, 1932, to A. C. Fleury, of Sacramento, Calif., has so many interesting angles that it is here given in full:

"I am enclosing 'Contraband and Refused Entry' report covering inspection of the new Matson liner 'Mariposa' upon her first round trip from Australia via Hawaii. Mr. Ross, who rode the vessel in with Mr. Clendenen, stated that the twelve mangoes in ship's stores were reeking with fruit fly larvae; in fact, the worst infestation he had ever encountered.

"You will note a general distribution throughout the ship of forbidden material. Further, when Mr. Mosle and Mr. Koppenhaver examined the crew's quarters a large amount of contraband material was also seized and burned.

"This matter was brought to the attention of the Port Steward and also the Chief Steward of the ship and I believe it will be corrected. It was very evident that every effort was being made to prevent such material being left on board the ship. It seems that there were new members of the crew, and as this is more or less an initial voyage, I feel that it will be unnecessary to take this matter up with the Matson Company unless similar violations occur on subsequent voyages.

"You may be interested in knowing that the ice boxes were thor-

oughly steamed and cleaned out so that there was no possibility that any larvae escaped. The nature of their ice boxes and the manner in which it is necessary to introduce steam causes great inconvenience and loss of food material, so that the penalty so far imposed is considerable, and I feel confident we will have no additional violations of this nature."

STEAMSHIP COMPANIES AID QUARANTINE ENFORCEMENT

Two cases of recent occurrence provide typical illustrations of the cooperation extended by the great majority of steamship companies in the enforcement of quarantine restrictions in which their vessels are concerned.

On June 15, 1932, a sailor on a vessel entering San Francisco from Hawaii was found to have nine mangoes in his locker. Inquiry revealed that, although it was his first trip to Hawaii on this vessel, all the members of the crew had been specifically notified concerning the regulations governing Hawaiian fruits and vegetables, and that the vessel was posted with the customary information on these restrictions. The steamship company severely reprimanded this employee and discharged him.

The second case occurred in New York, where in May of this year a ship's steward was discovered attempting to take ashore nine cases of mangoes. When the matter was brought to the attention of the steamship company, they expressed deep regret, assured us of their desire to cooperate with us in every way, and informed us that the offending steward had been discharged.

DOMESTIC PLANT QUARANTINES

A survey of all commercial gladiolus plantings in California is being made by County Agricultural commissioners of that State to determine the exact distribution of gladiolus thrips. Infestations were recently found at several points in Los Angeles County, previous to the time that treatment for such bulbs was required.

NARCISSUS BULB PESTS

Supplementing the amendment to the Federal narcissus bulb quarantine, two circulars have been issued entitled "Treatment and Pest Suppression Measures in Narcissus Plantings" (BPQ-337), and "Narcissus Inspection and Certification" (BPQ-338), respectively.

BLACK STEM RUST

Nurserymen in the following States have made application for permit under Federal Quarantine No. 38 to ship immune species of Berberis and Mahonia

into or between the 13 protected States from which the susceptible species are being eradicated:

Alabama	Kansas	Ohio
Colorado	Michigan	Pennsylvania
Illinois	Missouri	Virginia
Indiana	New Jersey	

DATE SCALE

During the month of June, 12,509 palm inspections were made in the Coachella Valley and no scale found. Only 2 infested palms were found during the past fiscal year as compared with 77 infested palms found in the fiscal year 1931. No new infestations have been found in the past two years. All palms in the Valley with the exception of those in a few plantings which, because of location and history are considered free from scale, have been inspected at least once during the year, others as many as four times.

In the Imperial Valley, 3,299 palm inspections were made in June and 1 date palm found infested. During the fiscal year 1932, 14 date palms have been found infested as compared with 57 in the fiscal year 1931. In addition to the 14 date palms, 10 fan and 33 Canary Island palms were found infested in the fiscal year 1932. Scale was found on 5 new and 6 old properties in 1932 as compared with 7 new and 7 old properties in 1931.

No Parlatoria date scale has been found in Arizona in the fiscal year 1932.

After the first survey of the Imperial Valley, it was evident that conditions were considerably different there than in the Coachella Valley. There were comparatively few commercial plantings but a large number of small seedling plantings distributed over a wide area. Also there were a large number of infested palms and there had been a wide distribution of off-shoots. The first objective was locating and inspecting all date palms so that centers of dissemination might be located and the limits of the infested area established for intensive work. Little attention was paid to other varieties of palms at first as the infestations originated with the date palms. As the work progressed and repeated inspections located the infestations resulting from the spread, more attention was devoted to the other varieties of palms, first in the immediate vicinity of infestations, and at present all palms within the infested area are being inspected and listed. Comparatively few palms other than date have been found infested. This is due in part to the fewer number of these palms as compared with date palms; also, it would seem from the evidence at hand, to their structural characteristics.

EUROPEAN CORN BORER AND JAPANESE BEETLE

Exclusive or Combination Japanese Beetle Work

Erection at New Lisbon, N. J., of a fumigation house was during June completed by the Blueberry Growers' Association of that locality. The fumigating chamber is 13 feet 8 inches wide, 18 feet 9 inches long, and 10 feet high, giving a space capacity of 2,563 cubic feet. A control room built on the rear of the main house is modernly equipped with a thermostatically-controlled 50-gallon capacity electric water heater. By means of a motor-driven pump, hot water is forced to the fumigation chamber and through a coil in the bottom of an evaporating pan, 30 inches in diameter and 5 inches deep. The coil is formed by 60 feet of $\frac{1}{2}$ -inch copper tubing. Also located in the control room is a motor from which runs a shaft through a bearing in the wall to operate a fan in the fumigation chamber. The inside walls are asphalted, and the ceiling is of stripped tar paper, cemented and covered with asphalt. There is a 5-inch concrete floor in the chamber. In the center of the chamber, suspended 18 inches from the ceiling, is the evaporating pan. Carbon disulphide is introduced into the evaporating pan by means of a $1\frac{1}{4}$ -inch pipe leading from the pan to the outside of the building. Access to the fumigant inlet pipe is gained by means of wooden stairs leading to a platform over one of the end doors. By means of a funnel in the upturned end of the feed pipe, the required dosage of carbon disulphide is introduced and an outside valve immediately closed. The heated coils then rapidly volatilize the raw carbon disulphide. Thick, air-tight doors are provided at either end of the fumigation chamber. A 4-foot 1-inch wide cement loading platform extends the entire width of one end of the house. A narrower platform of the same width is located beneath the overhead wooden platform at the opposite exit. In this house will be fumigated all berries shipped by the Association, irrespective of destination inside or outside the Japanese beetle regulated zone. Such treatment assures the growers against previously experienced beetle damage to the berries in the wrapped packages. This house has a capacity of 400 crates. It is proposed to fumigate twice a day. The morning fumigation between 11 and 12 o'clock will take care of berries destined to unregulated cities. A second unsupervised fumigation from 1 to 2 o'clock will be made of berries intended for sale within infested territory. Initial use of the fumigation house is scheduled for the first week in July.

According to prepared curricula, the annual school for inspectors was this year held at the White Horse, N. J., district office on June 1, 2, and 3, with a repetition of the lectures and field work on June 6, 7, and 8. After an opening address by New Jersey Secretary of Agriculture William B. Duryee, classes were held on the following subjects: Parasites and their relation to the Japanese beetle, Dr. J. L. King; plants difficult to inspect, J. F. Erwin; sampling and analysis of lead-arsenated soil, G. A. Russel; and general entomology, R. J. Sim. The second day's classes comprised the following subjects: Ecology, Dr. Henry Fox; plant nomenclature and identification, G. K. Handle; general botany, C. O. Kelley; European corn borer scouting and inspection, C. W. Lewis; and Japanese beetle suppression, E. G. Rex. The final session of the

school consisted of the following classes: Action of lead arsenate in the soil and its effect on Japanese beetle larvae, Dr. W. E. Fleming; new developments and approved recommendations for control of adult Japanese beetle, Fred Metzger; field identification of plants by flowers, stems, leaves and root formations, G. K. Handle and J. F. Erwin; and Japanese beetle fumigation requirements, V. A. Johnson. A period for review and questions followed the final lecture. With the exception of Secretary Duryee and E. G. Rex, of the New Jersey Department of Agriculture, Messrs. Handle, Russel, Johnson, Erwin, and Kelley, of the Japanese beetle quarantine corps, and C. W. Lewis, of the corn borer quarantine staff, the instructors were provided from the Japanese beetle research staff at Moorestown, N. J. Members of the permanent Pennsylvania personnel whose services could be spared for the school session were in attendance. The entire New Jersey force was present at one or the other series of classes.

Placement and baiting of 500 beetle traps began on June 27 in Philadelphia. This quantity of traps will be distributed among six vacant lots whose surface areas have been poisoned with lead arsenate and on which smartweed was planted last fall. Two thousand potted smartweed plants grown at the White Horse headquarters are being used as replacements where conditions prevented growth of the weeds on the lots. Sixty traps have also been placed on the acre lot of smartweed on poisoned soil in the field adjacent to the White Horse office. A portion of the White Horse plot planted this spring with stratified smartweed seed is not evidencing as good growth as the stand from the fall-planted seed. The traps in use on the smartweed plots are equipped with 4-quart capacity, fabricated galvanized iron beetle cylinders, 13 inches deep and 5 inches in diameter. These containers are perforated for aeration and ready observation of the beetle contents. Pressed in the metal are lines to designate each quart of beetles in the can. Average counts of quantities of beetles show that there are approximately 3,300 beetles per quart, which gives each container a capacity of 13,200 beetles. In Philadelphia, the contents of each trap are dumped into galvanized iron ash cans containing a small amount of gasoline. At the conclusion of the day's collections, the cans are weighed, the weight of the can and estimated unevaporated gasoline subtracted, and the daily collection from each plot calculated on the basis of 4,800 beetles per pound.

Partial delivery was made during the month of the project's allotment of certificates. Certificates received on the summer printing order contain the new Bureau of Plant Quarantine designation and are exclusively Japanese beetle certificates. After reserving a nominal quantity of the certificates for a central supply, the remainder of the order is being apportioned among the district offices in accordance with their annual requirements for certificates. The total certificate printing order includes 500,000 numbered "A" certificates with attached shipping invoices, used to accompany individual packages in small shipments of quarantined articles; 250,000 unnumbered "A" certificate stubs, used in connection with the numbered "A's" when the consignment consists of more than one package; 500,000 numbered "A" certificate stubs, used by uninfested Class I establishments which are not required to report the use of each individual certificate; 300,000 numbered "B" certificates used for bulk shipments of

quarantined articles, intradealer shipments within the quarantined zone, and consignments of quarantined farm products; and 5,000 "P" permits issued to accompany trucks moving quarantined articles between separated regulated areas. During the fiscal year 1932 there were issued by Japanese beetle inspectors a total of 752,662 certificates of all types. These were all simplified, joint Japanese beetle and European corn borer certificates introduced during the preceding June.

The most promising model of a bean "debeetler" constructed at the White Horse, N. J., district headquarters was on June 23 taken to Pasadena, Md., for trial. The mechanical beetle separator had previously demonstrated its ability to remove Japanese beetles from infested beans. The effect of the machine on the keeping qualities of the beans had previously been undetermined. Fifty bushels of "Bountiful" beans and five bushels of "Black Valentine" beans, all freshly picked, were run through the machine at the farm. The beans were then packed in the usual manner and shipped via express to the White Horse office. Critical examination of the beans for several days after their arrival at White Horse revealed no physical injury in comparison with checks from the same source but not subjected to a trip through the machine. Six of these machines have been completed and six additional machines with slight modifications are being completed. It is believed that 12 such separators will be sufficient for the needs in South Jersey. One and one-half-ton trucks will be used to move the machines to the various inspection points as occasion requires.

Nursery and greenhouse inspectors working under the direction of the treating division during June supervised the application of arsenate of lead to 67.82 acres in nursery plots located in 10 classified commercial establishments. Growing in the plots were 387,878 evergreen and deciduous ornamental plants. Including the treatments applied during May, 73.04 acres of ground, containing 456,993 plants, have been treated this season. In the summer of 1931, 60.32 acres containing 499,139 plants were similarly treated with lead arsenate. Thus, although an area greater by 12.72 acres than the 1931 total was treated this year, there were 42,146 fewer plants in the nursery blocks poisoned. Treating instructions permit the lifting and shipment under certification by September 20 of plants growing in plots which have been subjected to lead arsenate treatment for two successive seasons. Plants which receive their initial treatment this year are not eligible for certification until October 1.

Yellow posters containing a summary of the regulations and a black outline map of the regulated areas this year replaced the usual colored maps of the Japanese beetle regulated zone. To fill a need for a small number of colored maps of the restricted territory, 1,000 maps were prepared by spray painting U. S. Geological Survey outline maps of the Eastern and North Central States. The areas were first traced on one of the black and white maps and by means of an arc light this outline was transferred to stencil card. Areas representing the regulated zones were then cut out and the stencil used as a mask for applying the color. Several small lead weights held the stencil in position while color was rapidly sprayed on by means of a small air brush in

which was used regular air brush paint. Rubber stamps were used to place on the blank portion of the maps the legend, effective date of the regulated areas as depicted, and the address of the South Norwalk headquarters.

Occupancy was secured on June 30 of office space assigned for a Japanese beetle quarantine suboffice in the new United States Post Office and Court House Building at Baltimore. Removal of office furniture, files, and supplies from the former office at 301 East North Avenue was accomplished by June 30, but business was not transacted through the new quarters until the following day. The new suboffice occupies Room 306, which is of sufficient size for subdivision into a number of smaller offices. Telephone number of the office is Plaza 8325, Extension 457. The new Federal building is modern in every respect, being equipped with numerous elevators and other conveniences, and having a cafeteria on the upper floor operated on a nonprofit basis by a committee of postal employees. Garage space for government cars has been leased near the Federal building. Parking in the business section near the new Post Office is strictly prohibited.

E. G. Brewer, who since 1922 has been in charge of the western section of the corn borer area, was on June 8 transferred to the South Norwalk headquarters where he assumed the position of first assistant to Mr. Worthley. Since entering the Department of Agriculture in 1919, Mr. Brewer has been continuously engaged in corn borer control work. His first activities in this phase of the work were in Massachusetts and New Hampshire under the Bureau of Entomology. Mr. Brewer will continue in immediate contact with the activities in the western section, but will devote the major portion of his time to field and headquarter operations under both the Japanese beetle and European corn borer quarantine enforcement. O. P. Norris succeeds Mr. Brewer as section leader with headquarters at Springfield, Ohio.

A center for inspection and certification of quarantined farm products was again established on June 15 in the Center Market, Baltimore. Inspection service is available at the platform continuously from midnight Sunday to 6 p. m. Saturday. A single farm products inspector is assigned to the inspection platform opened at the City Market, Hagerstown, Md. In Washington, D. C., there are two inspection platforms, one at the Southwest Market and the other at the Union Market Terminal. A corps of three inspectors is maintained at each of the District of Columbia inspection centers from 3 a. m. to 6 p. m. An inspection platform has also been opened at the Southgate Terminal in Norfolk, Va., with two inspectors assigned to that point.

J. C. Silver, assistant entomologist, formerly assigned to western section European corn borer headquarters at Springfield, Ohio, was on June 13 transferred to the South Norwalk headquarters. At the South Norwalk station, Mr. Silver will have charge of determining all specimen material submitted by scouts, trap inspectors, or individuals. He will also continue his work of collecting and preparing specimens and mounts for use of seasonal personnel and in arranging exhibit material as from time to time required. Agent H. A. Wenzel, who formerly handled the work taken over by Mr. Silver, has been assigned

to field work in Philadelphia, Pa., where he will supervise trap operations in connection with the summer's lead arsenate-smartweed-trapping demonstration in that city.

In addition to a farm products inspection platform established at 3d and Florist Streets, beneath the Delaware River Bridge, in Philadelphia, the opening of the farm products and cut flower quarantine on June 15 required the assignment of inspectors at the following locations in that city: Perishable Products Terminal, Pennsylvania Railroad Perishable Products Terminal, Navy Yard, and Piers 5 and 9 North and Pier 38 South (banana piers). Cut flower inspectors were also stationed at the establishments of two wholesale cut flower dealers in the city. Another inspector devotes his time to visiting steamships docked in Philadelphia to compel compliance with the regulations in respect to quarantined articles moved from the port to uninfested territory.

Japanese beetle personnel was increased on June 15 by the addition of temporary inspectors and scouts for the seasonal activities occasioned by the summer quarantine on cut flowers and certain farm products, and by the necessity for periodic scouting of classified nursery and greenhouse establishments. Adult beetles were removed from cut flowers offered for inspection shortly after the establishment of the cut flower inspection. Field emergence of adult beetles was so moderate until late in the month that almost negligible infestation of quarantined farm products was observed.

Scouting of classified nursery and greenhouse establishments and farms began on June 11 when six scout crews commenced operations in the territory under the jurisdiction of the Baltimore office. Three of these crews were engaged in scouting establishments and farms in Baltimore and adjacent Maryland regulated sections. One crew is assigned to Hagerstown, Md., and vicinity, one to Clarendon, Va., and one to Norfolk, Va. The Clarendon crew will scout nurseries and greenhouses in Virginia and in the District of Columbia. The crew stationed in Norfolk will cover similar establishments in Norfolk, Portsmouth, and Newport News.

Announcement was made on June 7 of the Department's decision to continue the Federal Japanese beetle quarantine regulations. Since the conference held on March 25 to discuss the advisability of revoking Notice of Quarantine No. 48 and the supplemental regulations, consideration has been given by the Administration to the statements made by the State and commercial representatives present at the conference. Final decision of the Department was based on the almost unanimous sentiment expressed in favor of maintaining the Federal Japanese beetle quarantine.

J. S. Stockbridge has been assigned from the South Norwalk headquarters to assume charge of Japanese beetle trapping activities in the District of Columbia. T. C. F. Cronin, who will be relieved by Mr. Stockbridge, will transfer to Massachusetts where he will supervise placement and operation of traps in unregulated territory.

Owing to the presence of numerous adult beetles in the Hammonton and Rosenhayn sections of southern New Jersey, it was necessary after June 30 to require fumigation of all blueberries, blackberries, and raspberries produced in this area before certification could be granted to permit movement of these articles from the regulated zone.

Featured in colors on the cover of the June 4, 1932, edition of The Saturday Evening Post is a whistling, barefoot farmer boy with upraised hoe. Surrounding the boy are paintings of a stag beetle, grasshopper, larva of the cecropia moth, snail, and an adult Japanese beetle.

From June 20 to 29 approximately 1,250 Japanese beetle traps were distributed in Sussex County, N. J. This work is being carried on as a State project in an attempt to determine the feasibility of traps as substitutes for scouting.

The first trapped beetle caught this season was collected at Washington, D. C., on June 6.

Market and field inspection of cut flowers and those farm products under regulation because of the corn borer quarantine started on June 1, while the farm produce and cut flower regulations of the Japanese beetle quarantine became effective on June 15. The increase in size of both regulated areas has increased the amount of certification and inspection work necessary. In the New York City area, temporary inspectors have been engaged to handle the work at that point and in the eastern New York area.

On June 9, J. P. Johnson gave an illustrated talk on the Japanese beetle and explained the quarantine regulations before a meeting of vegetable growers and farm bureau members of Windham County at Putnam, Conn.

All Japanese beetle quarantine lines which were operating in the New England areas were discontinued during the past month. Those in Massachusetts and Vermont were discontinued about June 15, and on the same date those in New York, with the exception of two, were closed. Stations 81 and 82, at the Pennsylvania-New York line, were closed on June 30. The movement of balled nursery stock and potted plants practically stopped on June 15, and there was little or no movement of farm products originating in beetle areas except shipments of such products from New Jersey and Pennsylvania to Binghamton and Elmira, N. Y. Quarantine lines were continued in that area until June 30 to prevent movement of uncertified products to points outside the regulated areas. Inspectors have now been assigned to work in these two markets to inspect and check on movement of quarantined produce.

Preparation has been made for schooling and sending into the field on July 18 of a large number of nursery and greenhouse inspectors throughout the Japanese beetle regulated area. Selections are also being made of competent men to act as trap inspectors in those States north of Pennsylvania.

Specialized Corn Borer Activities

The corn borer clean-up campaign in Connecticut has been completed. It was necessary for the State to prosecute but seven growers upon whom penalties of fines and costs were imposed. One case was appealed on a technicality and will be heard before the Superior Court of Criminal Pleas in September.

Additional storage space has been secured under a permit from the War Department at the New Cumberland General Depot, New Cumberland, Pa. A large number of trucks in storage at South Norwalk have been moved to this storage space, resulting in the saving of \$1,500 per annum in rental of a storehouse.

A meeting of the Eastern Plant Board was held at Philadelphia, Pa., on June 27, to consider the advisability of recommending the placing of a quarantine around the 2-generation corn borer area. Lee A. Strong, Chief of the Plant Quarantine and Control Administration, and L. H. Worthley, represented the Administration at the meeting.

MEXICAN FRUIT WORM

Only one infestation of Anastrepha ludens was found in Valley fruit during the month of June. This occurred in fruit which had been purchased from the Texas Citrus Fruit Growers Exchange by a land development company northwest of Mission. This fruit had been in cold storage from March 25 to June 13. In preparing this fruit for serving, the cook for the development company's club house discovered worms in a fruit and notified the pest control representative of the company, who in turn notified the inspectors in the Mission office. A close inspection of the remaining fruit resulted in taking 22 dead larvae from 3 grapefruit. Through the records of the Exchange, the grove of origin of this fruit was traced to one of two groves located about 5 miles northeast of Mission. Neither of these groves had previously been reported as infested.

Approximately 6,000 fly traps were operated in 455 premises on the American side of the river during the month. The operation of these traps resulted in the taking of 216 adult Anastrepha pallens but no A. ludens. Twenty-two A. pallens were taken in the traps in Matamoros.

It was thought at the time the quarantine was established in 1927 that any adult flies remaining in the Valley at the beginning of the host-free period would be unable to survive until the new crop of fruit was ripe enough for oviposition. Subsequent studies at the laboratory in Mexico have shown that a few hardy individuals are able to survive over this period of time. It would appear, therefore, that the infestations which have recurred from time

to time since 1927 on this side of the river are holdovers rather than new infestations from Mexico. Realizing that the sanitary requirements and host-free period are not resulting in 100 per cent eradication, it was desired to give the bearing trees of the Valley an application of poison bait spray. A survey of the economic condition of the Valley showed that many growers would be unable to purchase spray materials and knapsack sprayers. To be effective it was necessary that practically a complete coverage of bearing trees be obtained, and to accomplish this ~~it was necessary~~ for the Federal, State, and County Governments and the growers to cooperate in the campaign. Upon assurance from the industry that practically 100 per cent coverage could be expected, the Federal Department purchased and shipped to the Valley 5 tank cars of blackstrap molasses and 36 drums of nicotine-sulphate, the ingredients of the bait. The State purchased 100 and the Commissioners' Courts of the three counties purchased 210 knapsack sprayers. The growers will furnish the labor of applying the bait.

The material on arrival in the Valley was distributed to 13 supply depots designated by the State, where it will be available for distribution to the growers. Some 400 steel drums were borrowed from oil companies and individuals for drawing off and distributing the molasses.

The application of the bait, at the rate of one-fourth to 1 pint per tree, depending on the size, will start the first week in July. It is planned to give a second application in August. Under laboratory conditions, this nicotine-molasses bait retains its toxicity from 30 to 45 days.

Mangoes reaching the Matamoros market during the month from the State of Michoacan, in the southern part of Mexico, were found to be very heavily infested with larvae of the fruit fly. All fruit reaching Matamoros is inspected by the Mexican and American inspectors before being released from the express office. Any fruit showing external evidence of infestation is confiscated and after a thorough examination is destroyed. As a result of these inspections 13,826 larvae were taken from mangoes. This is just about double the total number of specimens of fruit fly taken in Matamoros since September, 1930.

Since the confiscation of infested fruit did not stop the importation of mangoes from Michoacan, the Mexican inspector advised all vendors of fruit in Matamoros to refrain from ordering fruit from that locality. He further advised the vendors that nonacceptance of this advice would result in a fine of 50 pesos against the merchant ordering the fruit. On June 22, two boxes of mangoes were received at the express office on open consignment from a dealer in Michoacan. This fruit, which was infested, was confiscated and a fine of 50 pesos levied against the shipper.

One adult fruit fly was taken in the traps in Matamoros on June 9. The regular routine of four applications of poison bait spray in the four blocks surrounding the infestation was immediately started. No larvae were found in locally-produced fruit during the month. This makes 13 months that local fruit in Matamoros has been kept free of infestation and speaks highly of the

efficiency of the poison bait.

The road stations were discontinued during the latter part of the month. The equipment was brought into Harlingen for storage. Very few complaints were voiced by the traveling public against the traffic inspection work during the past season.

PINK BOLLWORM

The discovery of the pink bollworm in southern Florida has already been announced through the press. The Bureau of Plant Industry has several experimental plantings of cultivated cotton, totaling not over 2 acres, at the United States Plant Introduction Gardens, located at Chapman Field, about 15 miles south of Miami. Bolls which had been attacked by an insect were collected at these plots and sent to Washington, and on June 1 the Plant Quarantine and Control Administration was notified that the insect had been identified as the pink bollworm. Inspectors of this project were immediately sent to Miami to make a thorough survey.

It was found that there was wild cotton growing in the southern part of Florida and on some of the keys. The leaves, blooms, and bolls of this wild cotton are similar to domestic cotton, and it is placed by botanists in the same genus. The bolls are very small, usually containing three locks, with very short lint of a brownish color. In most cases only scattering plants were found; however, occasionally a colony of plants was found covering as much as an acre. The wild cotton begins to appear more abundantly about 65 or 70 miles below Miami, and extends for the next 25 or 30 miles, all of this strip being infested. A small amount of cotton was found from here on southward, extending into the city of Key West, none of which was infested. At Flamingo, on Cape Sable, there was a considerable amount of infested wild cotton. It was impossible to make a thorough survey in this locality due to the fact that this is the rainy season and the roads are impassable.

In order to avoid any possibility of infested material being taken away by tourists, it was decided first to remove all wild cotton along the roadside. After this was completed all cotton growing on keys through which the road passes was removed and destroyed. In addition all dooryard plantings at Key West and also at Miami and vicinity were destroyed. This work was completed by July 1, with the exception of one colony some distance from the highway on Key Largo, which was discovered the latter part of June. It was thought best not to remove all of the cultivated plots of cotton at Chapman Field at one time so as to avoid any possibility of driving the pest to some other malvaceous plants. Therefore, with the cooperation of the Bureau of Plant Industry, all bolls were picked off and burned. The blooms are being picked daily and destroyed. This procedure will be followed until the infestation disappears, after which final plans for eradication will be completed.

The wild cotton is found in restricted localities. Where the soil is very good, other tropical plants crowd it out. Therefore, it is confined to a small area which is too salty for jungle plants and not quite salty enough for the mangrove. It grows in a thin layer of soil on solid rock, and can ordinarily be pulled up with ease. This point is very much in our favor in eradicating the wild cotton.

There are numerous small islands off the coast of Florida, many of which are rather difficult to reach. It is necessary to have two boats--one for navigating deep water and a smaller boat in which to approach the islands, where it is oftentimes rather difficult to land due to mangrove swamps and other dense growths. In a 2-day cruise two inspectors made a survey of seven of these small islands between Matecumbe Key and Cape Sable. On four of these a small quantity of cotton was found, some of which was infested.

A survey is now under way to determine exactly how much cotton is in southern Florida and the probable cost of eliminating it. In the meantime, as cotton is found from which infestation might be carried by tourists or where the pink bollworm population might increase to such a point that there would be danger of spread by wind movements, it will be eradicated. It is hoped that the precautionary measures taken will largely eliminate any spread of the insect during the eradication work. Due to the great distance between the infested area and the commercial cotton plantings, it is not believed that any quarantine action is necessary at this time.

The removal of volunteer cotton from abandoned acreages in the two infested localities in the Salt River Valley of Arizona was completed the latter part of June. A total of 7,743 acres was cleaned. The number of plants growing on the acreage covered varied from a few scattering plants to as high as a 75 per cent stand on approximately 3,000 acres. If there are summer rains it is quite likely that additional volunteer cotton will come up on some of the acreage. This situation will be watched very carefully and, should additional plants appear, in all probability the acreage will be cleaned the second time. All fruit was removed from the plants before the fields were cleaned. In this manner a rather complete inspection was made of the two areas most likely to show infestation, the results having all been negative. It is hoped that this clean-up will complete the eradication of the pink bollworm from the Salt River Valley.

A considerable quantity of green bolls and cottonseed had been collected from cotton States east of the Mississippi River. After the pink bollworm was found in Florida, intensive inspections were made of this material at the various laboratories. At the San Antonio laboratory, 87,675 green bolls were examined. At the Alpine and El Paso laboratories, 1,207 pounds of cottonseed were inspected. No signs of the pink bollworm were discovered in any of this material. There remains a small quantity of bolls and seed to be inspected, which will be completed during July. By these methods we have thus been able to make a general inspection throughout the Cotton Belt.

PREVENTING SPREAD OF MOTHS

Scouting work in southwestern Massachusetts and northwestern Connecticut was concluded by the first of June, and high-pressure spraying work was begun at and in the vicinity of the infested sites located during the fiscal year 1932 in the New England portion of the barrier zone. During June, scouting by the 40-foot strip method was completed in the towns of Danby, Orwell, Wells, and Whiting, Vt. At the close of the month, 7 crews were scouting by this method in the towns of Cornwall and Shoreham, Vt. Work was discontinued at the latter towns with the termination of June 30, and most of the men who were working there were dropped from the force. The remainder of the force in Vermont were transferred to other gipsy moth work in Massachusetts and Connecticut. There were no gipsy moth infestations found in this section of Vermont during the fiscal year ending June 30, 1932. A small infestation was located, however, in the town of Highgate, Vt., near the Canadian border.

During the fiscal year just closed, there was found by the Federal force in the barrier-zone area in southwestern Massachusetts and northwestern Connecticut a total of 902 new gipsy moth egg clusters at 69 infested sites. The towns infested in this portion of Massachusetts were New Marlboro, Otis, Sandisfield, Sheffield, and Tyringham. In Connecticut, the barrier-zone towns infested were Canaan, Norfolk, North Canaan, Salisbury, and Warren.

Spraying work started on June 1, at which time there were 28 high-pressure spraying machines in operation in the barrier-zone area of New England. During the month there were 6 spraying machines of this type transferred from the European Corn Borer Project at South Norwalk, Conn., to this project. Four of the transferred machines were put into operation in the field upon delivery and the other 2 were held in reserve at Greenfield, Mass.

Upon the completion of the spraying work on Long Island by the New York Conservation Department, which occurred about the middle of the month, 4 spraying machines, which had been loaned to them by the Federal Gipsy Moth Project to do this work, were returned. These machines were also put into service in Connecticut and Massachusetts. This made a total of 36 high-pressure spraying machines operating in the infested area in the New England barrier zone. Spraying work was discontinued on June 30 and most of the equipment has been returned to the gipsy moth headquarters at Greenfield, Mass. There were approximately 2,898 acres of woodland and 3,029 scattered trees sprayed during this season. Approximately 64 tons of powdered arsenate of lead were used and about 3,090 gallons of fish oil were used as an adhesive.

The gipsy moth spraying season in New England usually begins about June 1, and runs from four to six weeks. With favorable weather, it requires every effort, careful planning, and no lost motion to complete the spraying necessary to cover the infested areas. Fish oil, when it can be used as an adhesive, eliminates the necessity for respraying and it is consequently a saver of time, materials used in spraying, and labor.

Each spraying truck belonging to this project has the following table which indicates the gauge pressures required at the spraying machine to give 300 pounds pressure at the nozzle when it is at the same level as the machine. In solid stream spraying, the most satisfactory results are obtained by using 300 pounds nozzle pressure regardless of the size of the tip used.

Length of		Size of the nozzle tip used				
1-inch hose	:	1/8-inch	:	3/16-inch	:	1/4-inch : 5/16-inch
Feet	:	Pounds	:	Pounds	:	Pounds
100	:	300	:	305	:	315 : 325
200	:	305	:	310	:	330 : 350
300	:	305	:	315	:	345 : 375
400	:	305	:	315	:	360 : 400
500	:	305	:	320	:	370 : 425
1000	:	305	:	335	:	440 : 550
1500	:	310	:	355	:	510 : 675
2000	:	310	:	370	:	580 : 800
2500	:	315	:	390	:	650 : 925
3000	:	315	:	405	:	720 : 1050
3500	:	320	:	425	:	790 : 1175
4000	:	320	:	440	:	860 : 1300
4500	:	325	:	460	:	930 : 1425
5000	:	325	:	475	:	1000 : 1550

If the nozzle is at a higher elevation than the machine, more pressure is necessary. To find the additional pump pressure needed to secure a nozzle pressure of 300 pounds, the throttle valve is closed and the hose-line filled with the nozzle open. The pump is then stopped and a reading instantly taken of the weight of the water in the hose-line as registered on the pressure gauge. The pressure registered on the gauge when a test of this sort is made is called back pressure. The number of pounds back pressure registered on the gauge is added to that given in the foregoing table to determine the pump pressure required to deliver 300 pounds pressure at the nozzle end of the hose-line. In our spraying work, nozzle tips of 1/8, 3/16, 1/4, and 5/16-inches are used. The 1/8-inch tip is used for spraying gray birches, sprout growth, fruit trees, etc. The tip with a 3/16-inch aperture delivers a sufficient volume of spray solution to satisfactorily spray all but the very large trees. For such trees, the 1/4 and 5/16-inch tips are used. Each nozzle is equipped with a device known as a spreader, which is movable and is used by the nozzleman when spraying fruit trees and low growth. The spreader not only prevents damage to the foliage close to the nozzle by breaking the force of the spray solution as it comes out of the tip, but it also breaks up the stream into a fan-shaped mist spray making it possible to cover the foliage evenly, quickly, and with a minimum loss of spray solution.

Spraying work was handicapped somewhat by the drought which prevailed in New England during May and the early part of June. Usually the streams and brooks in southwestern Massachusetts and northwestern Connecticut have sufficient water to supply the sprayer trucks throughout the entire season. This year, however, by the middle of June, many of these water sources had completely dried up

or became so low that it was necessary to move some of the sprayer trucks to new locations or haul water for considerable distances. About this time there were several days of heavy rain, and although this made the foliage too moist for spraying work, it increased the flow of water in the streams and no further delays were experienced on account of the lack of water.

Woodland spraying in the infested areas is an important phase in gipsy moth extermination work. On account of the topographical conditions in southwestern Massachusetts and northwestern Connecticut, woodland spraying in these sections is beset with many obstacles which make the operation of high-pressure spraying machines, similar to the type owned by the gipsy moth project, a difficult task. These areas are mountainous and there are very few roads leading from the main traveled highways that are developed or are in shape to warrant the driving of big, cumbersome spraying outfits over them. With the exception of two Model AA Ford 1-1/2-ton spraying trucks, the gipsy moth spraying apparatus consists of 41 Federal truck sprayers and 1 Ward LaFrance truck sprayer. The Federal truck sprayers were transferred to this project from the European Corn Borer and Mediterranean Fruit Fly Projects. These trucks weigh approximately 11,250 pounds with the sprayer attachment. The over-all length is 22 feet, the height is 8 feet 4 inches and the width is 7 feet 10 $\frac{1}{2}$ inches. They have a single tank, the capacity of which is 600 gallons. The solution tank is filled by direct drafting by means of suction hose or by the assistance of a separate pumper. When the water supply is adjacent to the location of the sprayer, the water is drafted by the sprayer pump itself. This process takes approximately 10 minutes in order to fill the 600-gallon tank. In cases where the water supply is some distance removed from the sprayer, an auxiliary pumper is set up at the stream or brook and is used to pump the water to the sprayer. In order to get continuous spraying, two machines are operated at the same location and they alternate in delivering the spray solution through a single line of hose. This is accomplished by the use of a special connection which has two male fittings on the Y end and a female fitting on the single end. A length of hose is connected to each machine and then runs to the male connection on the Y. This makes two lengths of 1-inch hose running into the Y connection. The connection is then attached to the spray hose-line by means of the female end. The machines are thus able to deliver the spray solution through a single line of hose alternately. When one sprayer is pumping the solution through the hose line, the other machine is drafting water and mixing the poison.

One of the Model AA 1-1/2-ton Ford sprayers owned by this project is considered an ideal spraying unit for gipsy moth work. This outfit weighs approximately 6,425 pounds with the spraying attachment. It is equipped with pneumatic tires and has a maximum road speed of 35-40 miles per hour. It can be operated over the rough, undeveloped country roads with little danger and to date there has been no spraying site in the infested area that was not accessible by this particular sprayer. It has two compartments of 150 gallons each in the solution tank which are independent of each other. By means of special hangers, a small auxiliary pump weighing approximately 75 pounds was installed underneath the truck chassis and on the pressure pump countershaft. This pump is equipped with a clutch which eliminates the necessity of its running continuously. The construction of the solution tank into two compartments, together

with the installation of the auxiliary pumper capable of drawing 50 gallons per minute makes it possible to obtain continuous solid stream spraying with this Ford outfit. As one compartment of spray solution is being delivered, the other empty compartment is filling in approximately three minutes by means of the installed auxiliary pumper. In using a 3/16-inch tip and a nozzle pressure of 300 pounds, 150 gallons of solution is delivered in approximately 12 minutes.

During the spraying season, three general automobile mechanics were temporarily detailed from the storehouse in Greenfield, Mass., to advantageous points in the area to be sprayed this season in the barrier zone. These men carried replacement parts with them and they returned weekly to the storehouse or when it was otherwise necessary for them to do so. Certain sprayer trucks in a given area were assigned to each of these mechanics. Periodic visitations to the sprayer machines assigned to them were made and any adjustments or repairs that were necessary were accomplished. This servicing of the sprayer machines in the field was responsible, no doubt to some extent, for the fact that there was very little time lost on account of faulty performance of the spraying equipment.

The assembling cage work was continued during June in New Jersey. Progress has been much more satisfactory than in May due to the fact that the area covered in June was a great deal less difficult to travel than the New Jersey pine belt sections. To June 30, cages were placed and made ready to receive the male gipsy moth attractant in approximately 42 townships.

Plans for obtaining notes on the gipsy moth, brown-tail moth, and satin moth defoliation were completed and the work was under way by the end of June. These observations will be made throughout New England by the district quarantine inspectors in connection with their regular duties and by agents assigned especially to this work. It is expected that the work will be in full swing by the first week of July.

The collection of gipsy moth pupae and the rearing of female moths to be used in connection with the assembling cage work was started at the close of June. It is expected that this work will be well advanced by the first week of July. This year pupae collection work will again center around Middleboro, Mass. This town is in the Cape Cod section of Massachusetts.

During the month of June, when the gipsy moth is in the larval stage, the inspections involved in the enforcement of the gipsy moth quarantine are greatly reduced. Under ordinary circumstances, this is the time of the year when vacation privileges are granted to the inspectors. In past years it has been found that the enforcement of the quarantine has not been handicapped by this arrangement because an inspector is able to take care of the required inspections in his neighboring district as well as his own during this period when shipments of products that are likely to carry gipsy moth infestation are at such a low ebb. During the latter part of June, considerable time is spent by the district inspectors in visiting camp sites located in heavily infested areas. Information

is secured at this time as to when campers intend to break camp, and with this data at hand, the inspectors plan to be present when this occurs. Gipsy moth caterpillars have been known to be carried in tent folds, and unless campers have some knowledge of this danger, either by personal knowledge of this insect, by gipsy moth posters, or by information from the inspectors, the danger of long-distance spread by this source is present. The district inspectors examine the camper's outfit before it is packed away to determine whether it is free from infestation before it is moved.

The practice of families living in so-called "houses on wheels" is another agency that may be responsible for the spread of the gipsy moth. Usually these families travel from State to State, stopping wherever work can be found in any section. When the head of the family is successful in finding work, the truck trailer is backed off the road into nearby woodlands or clearings and the outfit remains there as long as work holds out in that vicinity. During the course of their stay in any section that is heavily infested with the gipsy moth, the caterpillars, if abundant, may crawl and secrete themselves on the "house on wheels." The sheltered place affords the larvae ideal conditions under which to pupate and any female moths that issue may deposit their eggs on the vehicle. Up to the present time, one such outfit is now under observation in the heavily infested area near Portland, Me. The district inspector will examine the truck to determine whether it is free from infestation or not before it leaves for an unknown destination.

During June the district inspectors also visit railroad depots, post offices, tourist camps, and other public places of this character that are used by the traveling public, and after securing permission, place gipsy moth posters in conspicuous places where they may be seen and read. The size of this poster is 14 by 22 inches, and it illustrates the life history stages of the gipsy moth. It also shows the location of the infested area in New England and the barrier zone, in which latter area the Federal force confines its scouting and extermination efforts in the attempt to prevent the westward spread of this insect.
